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ABSTRACT

Clusters of environmental occupations have been surveyed to identify and describe those occupations at the professional, technical, skilled, semi-skilled, and unskilled levels. The duties and responsibilities, special knowledge, and special skills required are listed for each. Occupational clusters covered are (1) applied biological and agricultural occupations, (2) business, marketing, and management occupations, (3) health occupations, (4) industrially oriented occupations, and (5) personal and public service. Twenty specific jobs have been analyzed in depth and are cross-referenced to the previous listing. They are reprinted with modification from the Illinois Occupational Curriculum Project, Joliet Junior College. The areas investigated are a competency statement, frequency of performance, importance for job entry and job advancement, conditions for application of competency, and criteria that exhibit satisfactory application of the competency. (MS)

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EMPLOYMENT OPPORTUNITIES AND JOB ANALYSIS FOR SELECTED ENVIRONMENTAL OCCUPATIONS

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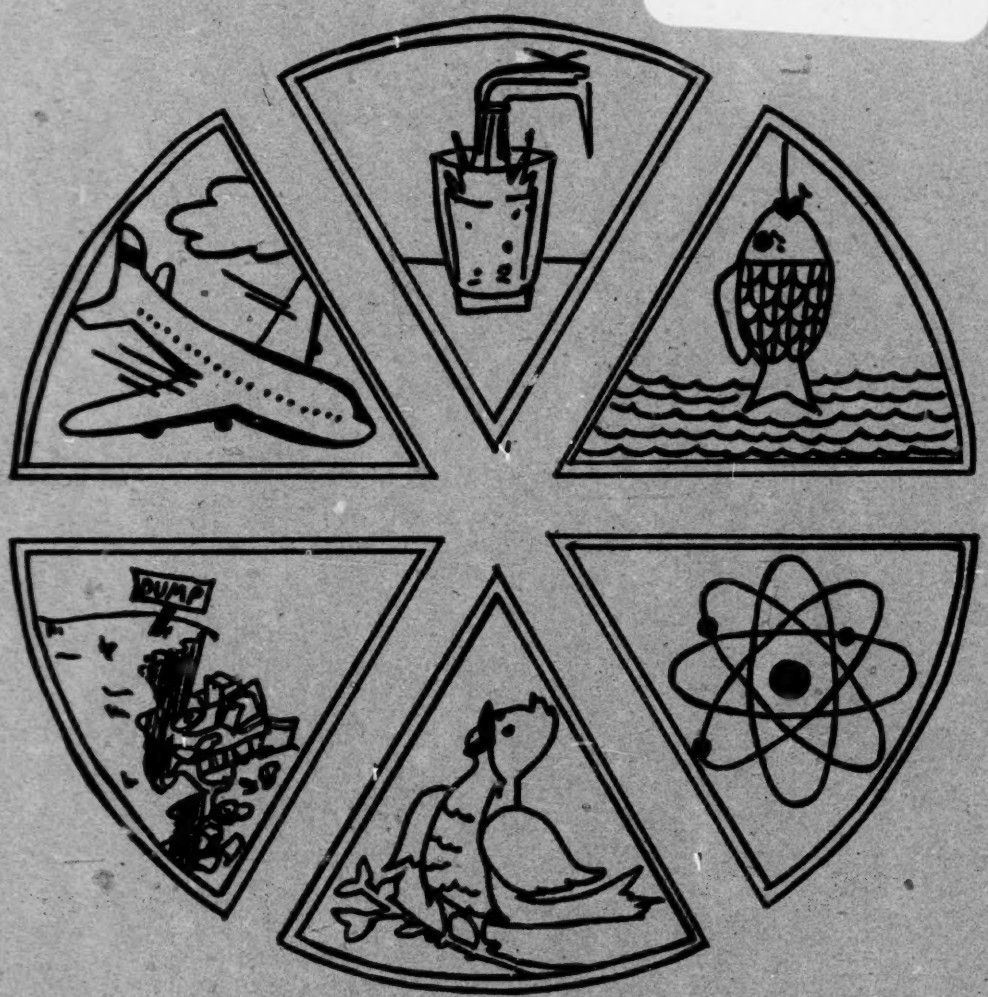

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FORWARD

During the past year, the Professional and Curriculum Development Unit, Division of Vocational and Technical Education for the Board of Vocational Education and Rehabilitation, in cooperation with the Department of Agricultural Industries, School of Agriculture, Southern Illinois University, Carbondale, has funded two environmentally related projects.

1. Pre-Service Program in Environmental Education, Program Phase, Project Number MP-3a. September 1, 1972 to June 30, 1973.

2. Pre-Service Program in Environmental Education, Training Phase, Project Number MP-3b-0P5a. September 1, 1972 to August 31, 1973.

The projects operated simultaneously with two major objectives.

1. Develop a program for training students in one of the vocational majors in the field of Environmental Education.

2. In the time available, provide the participants with as much exposure to the proposed program as possible.

As the project developed, the participants began to collect information which they deemed valuable to the prospective teacher in the areas related to "Environment".

Publications include:

a. An Environmental Glossary.

b. An Annotated Bibliography for Environmental Educators.

c. A Preview of Audio-Visual Materials Related to the Environment.

d. Employment Opportunities and Job Analysis for Selected Environmental Occupations.

e. A Pre-Service Program in Environmental Occupations.

These materials are specifically designed to serve as resource materials for Vocational Teachers who are teaching in Environmental Areas.

Thomas R. Stitt

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Project Director
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PROJECT INFORMATION SHEET

Project Title:

Pre-Service Program in Environmental Occupations, Program Phase, Contract Number MP-3a.

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Applied Biological and Agriculture Occupations

Professional	Technical	Skilled	Semi-Skilled	Un-Skilled
Air Pollution Control Chief	Air Pollution Control Engineer	Air Analyst	Air Pollution Control Aide	Water-Filter Cleaner
Aquatic Biologist	Forestry Technician	Environmental Inspector	Biological Aide	
Environmentalist	General Sanitation Technician	Food and Drug Inspector	Forester Aide	
Forest Ecologist	Public Health Bacteriologist	Purification Plant Operator	Water Shed Tender	
Plant Physiologist	Sewage Disposal Engineer	Toxicologist	Water Tender	
Sanitarian	Waste Water Technician	Water Pollution Control Inspector		
Sanitary Engineer				
Waste Water Plant Supervisor				
Water Maintenance Foreman				

I. Applied Biological and Agricultural Occupations

A. Professional and Management Level

1. Air Pollution Control Chief
(Refer to Personal and Public Service Occupations, management level)

2. Aquatic Biologist
   a) Duties and Responsibilities
      1) Studies the interaction of plants and animals living in water
      2) Studies methods of achieving or maintaining the system's balance
      3) Studies effects of certain pollutants on aquatic life
   b) Special Knowledge
      1) Must have a college degree in biology
      2) Must know how to properly test samples
   c) Special Skills
      1) Must be able to perform proper experiments to obtain information

3. Environmentalist
(Refer to Industrial Oriented Occupations, professional level)

4. Forest Ecologist
   a) Duties and Responsibilities
      1) Studies environmental factors that affect vegetation
      2) Carries out specialized research with different uses of soil
   b) Special Knowledge
      1) Must have knowledge in forestry disease and soils
      2) Must know proper research methods
   c) Special Skills
      1) Must be able to work various test equipment
      2) Must be able to do research in the proper methods

5. Plant Physiologist DOT 041.081
   a) Duties and Responsibilities
      1) Examines environmental conditions on plants
      2) Experiments with light, temperature, and mineral nutrients and their effect on plants
      3) Prepares reports on these physiological experiments

b) Special Knowledge
   1) Must have a bachelor's degree in biology
   2) Must know how to conduct proper experiments
c) Special Skills
   1) Must be able to conduct proper experiments
   2) Must be able to operate experimental equipment

6. Sanitarian DOT 079.118
a) Duties and Responsibilities
   1) Plans, develops, and executes environmental health programs
   2) Conducts training programs in environmental health
   3) Enforces health and sanitation regulations
b) Special Knowledge
   1) Bachelor's degree in environmental health
   2) Must know federal laws concerning public health
c) Special Skills
   1) Must be able to teach
   2) Must be able to plan sanitation programs

7. Sanitary Engineer DOT 005.081
a) Duties and Responsibilities
   1) Designs and oversees construction of hygienic projects, such as water works, sewage, and garbage disposals
   2) Plans development of watersheds, aquaducts, and rodent control projects
b) Special Knowledge
   1) Must have a degree in Engineering
   2) Must be aware of environmental health programs
c) Special Skills
   1) Must be able to plan projects
   2) Must be able to draft facilities needed in the projects

8. Waste Water Plant Supervisor
(Refer to In-Depth Job Analysis Section)

9. Water Maintenance Foreman
(Refer to Business and Management Occupations, management level)

B. Technical Level

1. Air Pollution Control Engineer
(Refer to Personal and Public Service occupations, technical level)

2. Forestry Technician DOT 441.383
   a) Duties and Responsibilities
      1) Plants and protects forest land
      2) Plans harvesting of timber
      3) Protects watersheds and starts control fires
   b Special Knowledge
      1) Must know how to establish forest practices
      2) Must know forestry principles
   c) Special Skills
      1) Must be able to use lab equipment
      2) Must be able to use various tools

3. General Sanitation Technician
(Refer to Health Occupations, technical level)

4. Public Health Bacteriologist DOT 041.281
   a) Duties and Responsibilities
      1) Conducts experiments to detect harmful or pathogenic bacteria in water and food supply
      2) Controls or eliminates sources of pollution
      3) Cooperates with hospitals in identifying disease-causing micro-organisms
   b) Special Knowledge
      1) Must know how to conduct experiments
      2) Must know how to identify types of bacteria
   c) Special Skills
      1) Must be able to conduct proper experiments

5. Sewage Disposal Engineer
   a) Duties and Responsibilities
      1) Designs and oversees construction of and operation of sewage disposal system
      2) Estimates cost of project and prepares specifications for equipment and materials
   b) Special Knowledge
      1) Must know regulations and principles of sewage disposal
      2) Must have a degree in Engineering
   c) Special Skills
      1) Must have good judgement
      2) Must be able to draft plans

6. Waste Water Technician
(Refer to Personal and Public Service occupations, technical level)

C. Skilled Level

1. Air Analyst DOT 012.281
   a) Duties and Responsibilities
      1) Obtains samples of air around industrial areas
      2) Analyzes sample to determine the amount of suspended foreign particles
      3) Prepares a report of the findings
   b) Special Knowledge
      1) Must know federal standards for air pollution
      2) Must know how to operate test equipment
   c) Special Skills
      1) Must be able to operate test equipment

2. Environmental Inspector
(Refer to Business and Management Occupations, skilled level)

3. Food and Drug Inspector
(Refer to Business and Management Occupations, skilled level)

4. Purification Plant Operator
(Refer to Health Occupations, skilled level)

5. Toxicologist
(Refer to Health Occupations, skilled level)

6. Water Pollution Control Inspector
(Refer to Business and Management Occupations, skilled level)

D. Semi-Skilled Level

1. Air Pollution Control Aide
(Refer to Personal and Public Service Occupations, semi-skilled level)

2. Biological Aide
   a) Duties and Responsibilities
      1) Assists technicians and others in obtaining data in various field work
      2) Helps personnel operate test equipment
   b) Special Knowledge
      1) A general biology background
   c) Special Skills
      1) Must be able to operate test equipment

3. Forester Aide
   a) Duties and Responsibilities
      1) Records and reads meter readings
      2) Provides general labor
      3) Performs field inspections
   b) Special Knowledge
      1) None
   c) Special Skills
      1) Must be able to read meters

4. Water Shed Tender
   (Refer to Industrial Oriented Occupations, semi-skilled level)

5. Water Tender
   (Refer to Industrial Oriented Occupations, semi-skilled level)

E. Unskilled Level

1. Water Filter Cleaner
   (Refer to Personal and Public Service Occupations, unskilled level)

Business, Marketing and Management

Professional	Technical	Skilled	Semi-Skilled	Un-Skilled
Air Pollution Control Chief	Industrial Health Statistician	Air Analyst	Clerk Typist	File Clerk
Air Pollution Control Director	Process Engineer	Applied Statistician	Secretary	General Office Clerk
Director of Environmental Affairs		Environmental Inspector		
General Landfill Manager		Food & Drug Inspector		
Incinerator Foreman		Industrial Waste Inspector		
Landfill Division Manager		Nuclear Inspector		
Manager of the Landscaping Center		Water Pollution Control Inspector		
Mine Foreman				
Office Manager				
Operations Manager				
Recycle Center Supervisor				
Sewage Maintenance Supervisor				
Water Maintenance Foreman				
Waste Water Plant Supervisor				

II. Business, Marketing and Management Occupations

A. Professional and Management Level

1. Air Pollution Control Chief
   (Refer to Personal & Public Service Occupations, professional level)

2. Air Pollution Control Director
   (Refer to Personal & Public Service Occupations, professional level)

3. Director of Environmental Affairs
   (Refer to In-Depth Job Analysis Section)

4. General Landfill Manager
   (Refer to In-Depth Job Analysis Section)

5. Incinerator Foreman
   (Refer to Health Occupations, professional level)

6. Landfill Division Manager
   (Refer to In-Depth Job Analysis Section)

7. Manager of Landscaping Center
   (Refer to In-Depth Job Analysis Section)

8. Mine Foreman
   (Refer to Industrial-Oriented Occupations, professional and management level)

9. Office Manager
   (Refer to In-Depth Job Analysis Section)

10. Operations Manager
    (Refer to In-Depth Job Analysis Section)

11. Recycling Center Supervisor
    (Refer to In-Depth Job Analysis Section)

12. Sewage Maintenance Supervisor DOT 954.782
    a) Duties and Responsibilities
       1) Supervises maintenance of equipment and activities of laborers
       2) Gives continuing and special instruction to crew and foreman
       3) Fosters good working conditions
    b) Special Knowledge
       1) Must know duties and responsibilities of all employees
       2) Must know how to evaluate the work of others
       3) Must be aware of new advances in the field

c) Special Skills
   1) Must be able to operate and repair equipment
   2) Must be able to lead subordinates
   3) Must be able to stimulate good attitudes

13. Water Maintenance Foreman DOT 954.782
   a) Duties and Responsibilities
      1) Supervises activities of workers and equipment in water treatment plant
      2) Fosters good working conditions
      3) Provides incentives for employees
   b) Special Knowledge
      1) Must know duties of employees
      2) Must know equipment operation and maintenance
   c) Special Skills
      1) Must be able to get along with employees and notice difficulties in worker relations and working conditions
      2) Must be able to repair and operate equipment
      3) Must be enthusiastic and able to stimulate workers

14. Waste Water Plant Supervisor
   (Refer to In-Depth Job Analysis Section)

B. Technical Level

1. Industrial Health Statistician DOT 020.188
   a) Duties and Responsibilities
      1) Prepares maps and charts
      2) Provides technical service to individuals and municipalities
      3) Prepares and maintains records
      4) Conducts in-service training programs
   b) Special Knowledge
      1) Must know how to use statistics
      2) Must know how to make records and make maps
   c) Special Skills
      1) Make maps and charts
      2) Perform clerical work
      3) Keep records

2. Process Engineer
   (Refer to In-Depth Job Analysis Section)

C. Skilled Level

1. Air Analyst
   (Refer to Applied Biological Occupations, skilled level)

2. Applied Statistician DOT 020.188
   a) Duties and Responsibilities
      1) Plans surveys
      2) Interprets analytical findings
      3) Conducts surveys
      4) Compiles data and maintains records
   b) Special Knowledge
      1) Must know how to evaluate and supervise reports
      2) Must know how to conduct proper surveys and compile data
      3) Must know principles of statistics
   c) Special Skills
      1) Must be able to make up and compile surveys
      2) Must be able to evaluate data

3. Environmental Inspector
   a) Duties and Responsibilities
      1) Determines environmental purity using a variety of mechanical chemical tests
      2) Analyzes and reports on samples and data collected
   b) Special Knowledge
      1) Must know how to conduct tests
      2) Must know regulations that establish standards for environmental contamination
   c) Special Skills
      1) Must be able to conduct tests and write reports

4. Food and Drug Inspector
   (Refer to Health Occupations, skilled level)

5. Industrial Waste Inspector DOT 168.287
   a) Duties and Responsibilities
      1) Inspects industrial and commercial waste disposal facilities
      2) Investigates source of pollutants in municipal sewage
      3) Compiles written reports of findings and recommends actions needed.
   b) Special Knowledge
      1) Must know how to conduct tests
      2) Must know level of harmful pollutants
      3) Must know federal and state regulations and laws
   c) Special Skills
      1) Must be able to conduct proper tests
      2) Must be able to analyze test results

6. Nuclear Inspector
   a) Duties and Responsibilities
      1) Inspects the plant facilities with various equipment to detect the degree of radiation contamination
      2) Analyzes test results and makes recommendations
   b) Special Knowledge
      1) Must know federal and state regulations and laws
      2) Must know how to conduct tests and use equipment
      3) Must know level of harmful radiation
   c) Special Skills
      1) Must be able to use radiation detectors
      2) Must be able to analyze test results

7. Water Pollution Control Inspector
   (Refer to Personal and Public Service Occupations, skilled level)

D. Semi-Skilled Level

1. Clerk-typist
   a) Duties and Responsibilities
      1) Compiles and types reports
      2) Files records and reports
      3) Sorts and distributes mail
      4) Answers telephone
   b) Special Skills
      1) Must be able to type
      2) Must be able to file properly

2. Secretary
   a) Duties and Responsibilities
      1) Carries out administrative and general office duties
      2) Takes and transcribes dictation
      3) Makes appointments and answers phone
      4) Types and files reports
   b) Special Skills
      1) Must be able to type
      2) Must be able to transcribe dictation

E. Unskilled Level

1. General Office Clerks
   a) Duties and Responsibilities
      1) Copies data
      2) Compiles records and reports
      3) Handles mail and correspondence
      4) Tabulates and posts data in record books
   b) Special Skills
      1) Must know how to operate office machines
      2) Must know how to file properly

2. File Clerks
   a) Duties and Responsibilities
      1) Records and retrieves data and records
      2) Classifies, sorts, and files correspondence
   b) 1) Must be able to read and write
      2) Must know how to file properly

Health Occupations

Professional	Technical	Skilled	Semi-Skilled	Un-Skilled
Environmentalist	Air Pollution Control Engineer	Air Pollution Control Inspector	Air Pollution Control Aide	File Clerk
Incinerator Foreman	General Environmental Engineer	Environmental Inspector	Clerk Typist	General Office Clerk
Industrial Health Engineer	General Sanitation Technician	Food & Drug Inspector	Secretary	Health Field
Physicist, Acoustic	Health Physicist	Industrial Waste Inspector	Waste Disposal Man	Water Filter Cleaner
Public Health Bacteriologist	Industrial Health Statistician	Nuclear Inspector		
Sanitarian	Industrial Hygienist	Purification Plant Operator		
Sanitary Engineer	Industrial Waste Inspector	Toxicoligist		
Sewage Maintenance Supervisor	Public Health Bacteriologist	Water Treatment Plant Operator		
Waste Water Plant Supervisor	Nuclear Engineer	Water Pollution Control Inspector		
Water Maintenance Foreman	Safety Inspector	Water Treatment Plant Operator		
	Station Engineer			
	Waste Water Plant Chemist			
	Waste Water Technician			
	Water Pollution Control Technician			
	Water Purification Chemist			

III. Health Occupations

A. Professional Level

1. Environmentalist
(Refer to Industrial Oriented Occupations, professional level)

2. Incinerator Foreman DOT 955.130
   a) Duties and Responsibilities
      1) Primarily concerned with the proper use of equipment to burn refuse
      2) Supervises incinerator operators and clerical personnel
      3) Trains new employees
      4) Inspects and adjusts machinery
      5) Provides written reports on the plant's operation
   b) Special Knowledge
      1) Must know how to operate and adjust equipment
      2) Must know how to teach new employees
      3) Must know how to write proper reports
   c) Special Skills
      1) Must be able to operate machinery
      2) Must be able to instruct new employees

3. Industrial Health Engineer DOT 012.188
   a) Duties and Responsibilities
      1) Plans and coordinates industrial health programs
      2) Analyzes and controls conditions contributing to occupational hazards
   b) Special Knowledge
      1) Must know how to test for safe limits of air, noise, and radiation pollution
      2) Must know how to implement control measures
   c) Special Skills
      1) Must be able to conduct tests
      2) Must be able to analyze results
      3) Must be able to implement control measures

4. Physicist, Acoustics DOT 023.081
   a) Duties and Responsibilities
      1) Investigates methods of minimizing noise in urban areas
      2) Determines effect of sound on materials and substances as well as physiological and psychological effects on human beings
      3) Conducts research into the phenomena of hearing, sound reproduction, and vibration

b) Special Knowledge
   1) Bachelor's degree in Physics
   2) Graduate training
c) Special Skills
   1) Good memory and imagination
   2) Ability to conduct proper experiments

5. Public Health Bacteriologist DOT 041.281
   a) Duties and Responsibilities
      1) Conducts experiments to detect presence of harmful bacteria in water or food
      2) Controls sources of possible pollution
   b) Special Knowledge
      1) Must know how to identify pollution in water and food supply
      2) Must know how to correct this contamination
   c) Special Skills
      1) Must be able to conduct experiments on samples of food and water

6. Sanitarian
   (Refer to Applied Biological Occupations, professional level)

7. Sanitary Engineer
   (Refer to Applied Biological Occupations, professional level)

8. Sewage Maintenance Supervisor
   (Refer to Business and Management Occupations, professional level)

9. Waste Water Plant Supervisor
   (Refer to In-Depth Job Analysis Section)

10. Water Maintenance Foreman
    (Refer to Industrial Occupations, management level)

B. Technical Level

1. Air Pollution Control Engineer
   (Refer to Personal and Public Service Occupations, technical level)

2. General Environmental Engineer
   (Refer to In-Depth Job Analysis Section)

3. General Sanitation Technician
   a) Duties and Responsibilities
      1) Gives technical advice and assistance in analyzing biological samples and specimens
      2) Writes reports
   b) Special Knowledge
      1) Must know how to analyze samples
      2) Must know how to conduct tests
      3) Must know safe levels of contamination
   c) Special Skills
      1) Must be able to conduct tests
      2) Must be able to analyze results and write reports

4. Health Physicist DOT 079.021
   a) Duties and Responsibilities
      1) Directs research in radiation hazards
      2) Conducts monitoring programs to protect plant and laboratory personnel from radiation
      3) Conducts training programs in radiation safety
   b) Special Knowledge
      1) Must know decontamination procedures
      2) Must know inspection standards
      3) Must know safe work methods
      4) Must know radiation limits
   c) Special Skills
      1) Must be able to teach safety classes
      2) Must be able to perform proper radiation tests

5. Industrial Health Statistician
   (Refer to Business and Management Occupations, technical level)

6. Industrial Hygienist DOT 079.188
   a) Duties and Responsibilities
      1) Conducts radiation, noise, and air pollution tests in specific areas
      2) Reports findings to the Health Engineer
   b) Special Knowledge
      1) Must know how to conduct the proper tests
   c) Special Skills
      1) Must be able to conduct noise, radiation, and noise pollution tests

7. Industrial Waste Inspector
   (Refer to Industrial Occupations, technical level)

8. Public Health Bacteriologist
   (Refer to Applied Biological Occupations, technical level)

9. Nuclear Engineer
   (Refer to In-Depth Job Analysis Section)

10. Safety Inspector DOT 168.248
    a) Duties and Responsibilities
        1) Inspects machinery equipment and working conditions for hazards to workers
        2) Acts to prevent accidents and fires
    b) Special Knowledge
        1) Must know safety standards
        2) Must know proper corrective actions needed to improve safety
    c) Special Skills
        1) Must be able to perform safety tests
        2) Must be able to write reports

11. Station Engineer
    (Refer to Industrial Occupations, technical level)

12. Waste Water Plant Chemist
    (Refer to In-Depth Job Analysis Section)

13. Waste Water Technician
    (Refer to Personal and Public Service Occupations, technical level)

14. Water Pollution Control Technician
    (Refer to Personal and Public Service Occupations, technical level)

15. Water Purification Chemist
    a) Duties and Responsibilities
        1) Performs chemical lab analysis
        2) Identifies sources of contamination
        3) Compiles and evaluates data
    b) Special Knowledge
        1) Chemistry
        2) Sources of water pollution
        3) Must know how to conduct experiments
    c) Special Skills
        1) Must be able to use lab equipment
        2) Must be able to evaluate data

C. Skilled Level

1. Air Pollution Control Inspector
   (Refer to Personal and Public Service Occupations, skilled level)

2. Environmental Inspector
   (Refer to Business and Management Occupations, skilled level)

3. Food and Drug Inspector DOT 168.287
   a) Duties and Responsibilities
      1) Inspects establishments where food and drugs are manufactured, handled or sold
      2) Enforces legal standards of sanitation
      3) Prepares reports of inspections
   b) Special Knowledge
      1) Must know sanitary standard to be met
      2) Must know how to use test equipment
   c) Special Skills
      1) Must be able to work with test equipment

4. Industrial Waste Inspector
   (Refer to Business and Management Occupations, skilled level)

5. Nuclear Inspector
   (Refer to Business and Management Occupations, skilled level)

6. Purification Plant Operator
   a) Duties and Responsibilities
      1) Oversees softening and purifying of water in water purification plant
      2) Filters and adds chlorine to water
   b) Special Knowledge
      1) Must know proper amount of chlorine and chemicals to be added
      2) Must know how to operate equipment
   c) Special Skills
      1) Must be able to operate equipment

7. Toxicologist
   a) Duties and Responsibilities
      1) Identifies the effects of air and water-born agents on the health of workers
      2) Prepares reports and recommends methods of reducing or eliminating the toxic substances
   b) Special Knowledge
      1) Must know how to identify toxic substances
      2) Must know proper methods of eliminating toxic substances
   c) Special Skills
      1) Must be able to perform analysis on substances to determine the content of fumes, dust and mist

8. Waste Water Plant Operator
   (Refer to In-Depth Job Analysis Section)

9. Water Pollution Control Inspector
(Refer to Personal and Public Service Occupations, skilled level)

10. Water Treatment Plant Operator
a) Duties and Responsibilities
1) Operates plant equipment properly
2) Maintains correct chemical balance in the water
3) Takes pressure readings and records the data
b) Special Knowledge
1) Must know how to operate plant equipment
2) Must know proper chemical levels in the water

D. Semi-Skilled Level

1. Air Pollution Control Aide
(Refer to Personal and Public Service Occupations, semi-skilled level)

2. Clerk Typist
(Refer to Business and Management Occupations, semi-skilled level)

3. Secretary
(Refer to Business and Management Occupations, semi-skilled level)

4. Waste Disposal Man DOT 955.883
a) Duties and Responsibilities
1) Disposes of radioactive equipment and wastes
2) Constructs concrete coffins for wastes
3) Burial is then performed at sea or in the ground
4) Keeps records of all procedures
b) Special Knowledge
1) Must know federal laws concerning radioactive waste disposal
2) Must know how to work with radioactive materials
3) Must know how to construct coffins
c) Special Skills
1) Keep records
2) Construct coffins
3) Operate equipment that is used with radioactive substances

E. Unskilled Level

1. File Clerks
(Refer to Business and Management Occupations, unskilled level)

2. General Office Clerks
(Refer to Business and Management Occupations, unskilled level)

3. Health Field Officer DOT 168.168
   a) Duties and Responsibilities
      1) Locates, advises, and questions persons exposed to communicable disease
      2) Writes reports
      3) Advises the people in obtaining treatment from a clinic
   b) Special Knowledge
      1) Must know disease effects
      2) Must know where persons must go for proper treatment
      3) Special Skills
         1) Must be able to write reports

4. Water Filter Cleaner
   (Refer to Personal and Public Service Occupations, unskilled level)

Industrial Oriented Occupations

Professional	Technical	Skilled	Semi-Skilled	Un-Skilled
Environmentalist	Air Conditioning Engineer	Air Conditioning Mechanic	Air Conditioning Unit Tester	Air Conditioning Mechanic's Helper
General Landfill Manager	Engineering Technician	Applied Statistician	Compactor Operator	Entry Operator
Industrial Health Engineer	General Environmental Engineer	Atomic Fuel Assembler	Mine car Repair-man	Oiler
Industrial Hygiene Physician	Industrial Health Statistician	Heavy Equipment Operator	Miner	Refuse Collector
Landfill Division Manager	Industrial Hygiene Engineer	Industrial Waste Inspector	Rock Dust Machine Operator	Water Truck Driver
Mine Foreman	Industrial X-Ray Operator	Mechanic	Waste Disposal Man	
Mining Engineer	Mining Investi-gator	Shovel & Drag-line Operator	Watershed Tender	
Office Manager for Landfill	Nuclear Engineer	Station Operator	Water Tender	
Operations Manager	Process Engineer	Water Meter Repairman		
Sewage Maintenance Supervisor	Radio Instrument Technician			
Water Maintenance Foreman	Station Engineer			

IV. Industrial Oriented Occupations

A. Professional and Management Level

1. Environmentalist DOT 079.118
   a) Duties and Responsibilities
      1) Inspects public facilities which may prove dangerous to the public health
      2) Works with civil defense in planning for emergency disaster aid for floods, tornadoes and earthquakes
      3) Takes and examines samples of water, air and food
   b) Special Knowledge
      1) Must know levels of contaminants which make public facilities unsafe for the public
      2) Must know how to analyze samples
   c) Special Abilities
      1) Must be able to write reports
      2) Must be able to speak at public gatherings

2. General Landfill Manager
   (Refer to In-Depth Job Analysis Section)

3. Industrial Health Engineer
   (Refer to Health Occupations, Professional and Management level)

4. Industrial Hygiene Physician DOT 070.108
   a) Duties and Responsibilities
      1) Treats illnesses and injuries
      2) Observes and studies health and safety hazards in the plant
      3) Makes recommendations and reports on violations of health laws
      4) Gives health and safety lectures
   b) Special Knowledge
      1) Must keep up-to-date on medical knowledge
      2) Must know laws concerning safety in industrial situations
   c) Special Skills
      1) Must be able to give lectures
      2) Must be able to treat injuries and illnesses
      3) Must be able to give medical examinations

5. Landfill Division Manager
(Refer to In-Depth Job Analysis Section)

6. Mine Foreman DOT 181.168
   a) Duties and Responsibilities
      1) Supervises and coordinates activities of personnel in one or more mines
      2) Inspects mines and reports safety violations
      3) Takes measures to improve production and working conditions
   b) Special Knowledge
      1) Safety regulations
      2) Proper mining procedures
      3) Employees' responsibilities
   c) Special Skills
      1) Ability to give orders
      2) Ability to lead groups
      3) Ability to coordinate activities

7. Mining Engineer DOT 010.81
   a) Duties and Responsibilities
      1) Determines location and plans extraction of coal
      2) Oversees construction of mines
   b) Special Knowledge
      1) Must know all mine operations
      2) Must know how to plan and develop construction of mine shafts
      3) Must know safety and environmental regulations concerning mining
   c) Special Skill
      1) Must be able to conduct geological explorations
      2) Must be able to manage construction operations

8. Office Manager (Landfill)
(Refer to In-Depth Job Analysis Section)

9. Operations Manager
(Refer to In-Depth Job Analysis Section)

10. Sewage Maintenance Supervisor
(Refer to Business and Management Occupations, Management level)

11. Water Maintenance Foreman
(Refer to Business and Management Occupations, Management level)

B. Technical Level

1. Air Conditioning Engineer DOT 007.081
   a) Duties and Responsibilities
      1) Specializes in designing air conditioning equipment
      2) Does research in air conditioning equipment
      3) Advises in construction and manufacturing of air conditioning equipment
   b) Special Knowledge
      1) Must know principles of air conditioning systems
      2) Must know principles of engineering
   c) Special Skills
      1) Must be able to draft designs of equipment

2. Engineering Technician
   (Refer to In-Depth Job Analysis Section)

3. General Environmental Engineer
   (Refer to In-Depth Job Analysis Section)

4. Industrial Health Statistician
   (Refer to Business and Management Occupations, technical level)

5. Industrial Hygiene Engineer DOT 079.188
   a) Duties and Responsibilities
      1) Tries to improve health and safety conditions in industry
      2) Uses highly sophisticated equipment in observing noise, light, and radiation danger in industry
      3) Makes recommendations for improvement
      4) Investigates complaints
   b) Special Knowledge
      1) Knowledge of proper and legal levels of noise, light, and radiation in industries
      2) Must know how to draw information from equipment
   c) Special Skills
      1) Must be able to operate technical equipment
      2) Must be able to make proper recommendations

6. Industrial X-ray Operator DOT 199.381
   a) Duties and Responsibilities
      1) Controls radiograph equipment to take radiographs of metal castings, metal samples, pipes, machinery, and structural members to detect flaws and presence of foreign objects

2) Marks defects and flaws on the film
3) Replaces radioactive isotope source in containers

b) Special Knowledge
1) Must know about radioactive materials
2) Must know how to operate radiograph equipment

c) Special Skills
1) Must be able to operate technical equipment
2) Must be able to analyze findings

7. Mining Investigator DOT 010.187
(Petroleum Products)

a) Duties and Responsibilities
1) Investigates earth substances to determine location and extent of mines and mining veins
2) Recommends installation locations and drilling procedures

b) Special Knowledge
1) Must know procedures in petroleum mining
2) Must know how to investigate earth substances

c) Special Skills
1) Must be able to draw conclusions from investigation information

8. Nuclear Engineer
(Refer to In-Depth Job Analysis Section)

9. Process Engineer
(Refer to In-Depth Job Analysis Section)

10. Radioactivity Instrument Maintenance Technician DOT 828.281

a) Duties and Responsibilities
1) Repairs electronic equipment such as computers, industrial controls, radar systems, and equipment for handling radioactive materials
2) Tests faulty equipment and replaces parts
3) Maintains records

b) Special Knowledge
1) Must know equipment operation
2) Must know how to recognize malfunctions

c) Special Skills
1) Must be able to work with tools
2) Must be able to repair malfunctions

11. Station Engineer DOT 914.782
    a) Duties and Responsibilities
        1) Operates pumping equipment
        2) Reads flow and pressure meters
        3) Adjusts valves to maintain proper flow rates and pressures
        4) Lubricates and repairs machinery
    b) Special Knowledge
        1) Must know proper flow rates and pressures
        2) Must know how to operate pump line equipment
    c) Special Skills
        1) Must be able to operate equipment
        2) Must be able to repair and maintain equipment

C. Skilled Level

1. Air Conditioning Mechanic DOT 637.281
    a) Duties and Responsibilities
        1) Installs industrial and commercial air conditioning equipment according to blueprints and engineering specifications
        2) Repairs industrial and commercial air conditioning equipment
    b) Special Knowledge
        1) Must know refrigeration principles
        2) Must know function and design of air conditioning units
    c) Special Skills
        1) Must be able to install air conditioning equipment
        2) Must be able to repair and maintain air conditioning equipment

2. Applied Statistician
(Refer to Business and Management Occupations, skilled level)

3. Atomic Fuel Assembler DOT 710.381
    a) Duties and Responsibilities
        1) Prepares fuel elements for use in nuclear reactors
        2) Strings fuel cells on wire rod using tweezers and safety gloves in a radiation shield box
        3) Inspects, weighs, and records radioactive materials used

b) Special Knowledge
   1) How to work with radioactive materials
   2) How to maintain records
c) Special Skills
   1) Must be able to string fuel cells

4. Heavy Equipment Operator
(Refer to In-Depth Job Analysis Section)

5. Industrial Waste Inspector
(Refer to Business and Management Occupations, skilled level)

6. Mechanic (Strip Mine) DOT 620.281
a) Duties and Responsibilities
   1) Maintains heavy equipment machinery
   2) Repairs heavy equipment machinery
b) Special Knowledge
   1) Must know principles of diesel and hydraulic equipment
   2) Must know how to repair heavy equipment machinery
c) Special Skills
   1) Must be able to work with tools to repair machinery

7. Shovel and Dragline Operator (Stripmining)
a) Duties and Responsibilities
   1) Cleans the overburden (layers of rock and earth) from coal veins
   2) Uses giant heavy equipment
b) Special Knowledge
   1) Must have knowledge of equipment used
   2) Must know techniques used in removing the overburden
c) Special Skills
   1) Must be able to operate large machinery
   2) Must be able to maintain large machinery

8. Station Operator
(Refer to In-Depth Job Analysis Section)

9. Water Meter Repairman DOT 710.281
a) Duties and Responsibilities
   1) Repairs or tests technical equipment
   2) Installs equipment
   3) Reads and records meter and gauge readings
b) Special Knowledge
   1) Mechanics of technical equipment
   2) How to read meters
   3) Know what the readings signify

c) Special Skills
   1) Must be able to repair technical equipment
   2) Must record data accurately
   3) Must read meters properly

D. Semi-Skilled

1. Air Conditioning Unit Tester DOT 827.381
   a) Duties and Responsibilities
      1) Tests efficiency of heating and air conditioning equipment under simulated operation situations
      2) Observes and records reading of instruments used to test equipment
      3) Informs supervisor of unusual noise
   b) Special Knowledge
      1) How to take readings
      2) How to set up test equipment
   c) Special Skills
      1) Must be able to set up test equipment
      2) Must be able to record proper test reading

2. Compactor Operator
   (Refer to In-Depth Job Analysis Section)

3. Mine Car Repairman DOT 622.381
   a) Duties and Responsibilities
      1) Repairs damaged parts of underground mine cars
      2) Examines mine cars for defects
      3) Welds and straightens bolts and rivets parts for mine cars
   b) Special Knowledge
      1) Must know physical make up of mine cars
      2) Must know how to weld and rivet

4. Miner DOT 850.781
   a) Duties and Responsibilities
      1) Loads blastholds and fires powder charges to loosen earth and rock
      2) Installs timbers or steel retaining structures to prevent cave-ins
      3) Operates equipment to load mine cars
      4) Lays track for mine cars
   b) Special Knowledge
      1) Must know mine safety rules
      2) Must know use of dynamite
   c) Special Skills
      1) Must be able to operate equipment
      2) Must be able to perform hard physical labor

5. Rock Dust Machine Operator
   a) Duties and Responsibilities
      1) Sprays walls, roofs, and floors of mines with powered limestone
      2) Controls fine coal dust that might explode
   b) Special Knowledge
      1) Must know how to detect level of coal dust in mines
      2) Must know how and where to spray
   c) Special Skills
      1) Must be able to operate spraying equipment

6. Waste Disposal Man
   (Refer to Health Occupations, semi-skilled level)

7. Watershed Tender DOT 954.782
   a) Duties and Responsibilities
      1) Controls gates in aqueducts and dams to regulate flow of water to maintain reservoir elevation at a specified level
      2) Monitors meters and gauges and records them in a log
      3) Protects watershed from trespassers and destructive wildlife (burrowing animals)
   b) Special Knowledge
      1) Must know proper water levels
   c) Special Skills
      1) Must be able to operate gates
      2) Must be able to operate monitoring equipment

8. Water Tender DOT 599.885
   a) Duties and Responsibilities
      1) Tends pumps to maintain water in boilers
      2) Tests water to determine suitability of water in boiler
      3) Adds chemicals to boiler water
   b) Special Knowledge
      1) How to read equipment
      2) Must know proper water conditions
      3) Must know amount and type of chemicals to be added
   c) Special Skills
      1) Must be able to operate water regulation equipment

E. Unskilled

1. Air Conditioning Mechanic Helper DOT 637.884
   a) Duties and Responsibilities
      1) Assists workers engaged in installing, repairing, and servicing industrial and commercial air conditioning systems

2) Cuts, punches, flunges, sheevs and soders sheet metals

b) Special Knowledge
1) Must know how to work with hand tools

2. Entry Operator
(Refer to In-Depth Job Analysis Section)

3. Oiler (Strip Mine) DOT 699.887
a) Duties and Responsibilities
1) Grease and oil heavy stripping equipment
2) Assist mechanic in machine repair
b) Special Knowledge
1) Must know signs of stress on machinery
c) Special Skills
1) Ability to follow diagram concerning proper maintenance of equipment

4. Refuse Collection Laborer DOT 929.887
a) Duties and Responsibilities
1) Collects trash and garbage
2) Operates equipment
3) Performs heavy physical labor
b) Special Knowledge
1) Know how to operate equipment

5. Water Truck Driver Helper DOT 905.887
a) Duties and Responsibilities
1) Assists water truck driver in transporting and handling materials
2) Load and unload vehicles by hand
b) Special Knowledge
none

Personal and Public Service

Professional	Technical	Skilled	Semi-Skilled	Un-Skilled
Air Pollution Control Chief	Air Pollution Control Engineer	Air Analyst	Air Control Aide	Entry Operator
Air Pollution Control Director	Forestry Technician	Air Pollution Control Inspector	Biological Aide	File Clerk
Camp Director	General Sanitation Technician	Environmental Inspector	City Planning Aide	General Office Clerk
Environmentalist	Home Economist	Fireman	Clerk Typist	Water Filter Cleaner
Forest Ecologist	Physic Radiation Technician	Industrial Waste Inspector	Biological Aide	
Incinerator Foreman	Public Health Bacteriologist	Nuclear Inspector	Forester Aide	
Reclamation Center Director	Station Engineer	Purification Plant Operator	Secretary	
Sanitarian	Urban Planning Technician	Waste Water Treatment Plant Operator	Volunteer Fireman	
Water Maintenance Foreman	Waste Water Plant Chemical Analyst	Water Pollution Control Inspector		
	Waste Water Technician	Water Treatment Plant Operator		
	Water Pollution Control Technician			
	Water Purification Cehmist			

V. Personal and Public Service Occupations

A. Professional and Management Level

1. Air Pollution Control Chief
   a) Duties and Responsibilities
      1) Calibrates and maintains lab equipment
      2) Collects samples
      3) Performs chemical lab analysis
      4) Reports on lab data
   b) Special Knowledge
      1) Air Pollution
      2) Lab techniques
      3) How to evaluate data
   c) Special Skills
      1) Must be able to maintain and operate equipment

2. Air Pollution Control Director
   a) Duties and Responsibilities
      1) Conducts training programs
      2) Prepares papers for publication
      3) Provides technical assistance and advice to government builders and industry
   b) Special Knowledge
      1) Air pollution
      2) Public relations
   c) Special Skill
      1) Must be able to prepare publications

3. Camp Director
   (Refer to In-Depth Job Analysis Section)

4. Environmentalist
   (Refer to Industrial Occupations, professional level)

5. Forest Ecologist
   (Refer to Applied Biological Occupations, professional level)

6. Incinerator Foreman
   (Refer to Health Occupations, management level)

7. Recreation Center Director
   a) Duties and Responsibilities
      1) Supervises activities
      2) Plans activities of staff
      3) Performs public relations
   b) Special Knowledge
      1) Recreation
      2) Child behavior
      3) Public relations
   c) Special Skills
      1) Must be able to get along with children

8. Sanitarian
(Refer to Applied Biological Occupations, professional level)

9. Water Maintenance Foreman
(Refer to Business and Management Occupations, management level)

B. Technical Level

1. Air Pollution Control Engineer
   a) Duties and Responsibilities
      1) Inspects, adjusts and repairs technical equipment
      2) Instructs and reviews work of inspectors
      3) Tests and develops new products and equipment
      4) Prepares maps, charts and records
   b) Special Knowledge
      1) Must know how to teach
      2) Must know equipment operations and repairs
      3) Must understand principles of air pollution
   c) Special Skills
      1) Must be able to repair equipment
      2) Must be able to test new equipment
      3) Must be able to train new inspectors

2. Forestry Technician
(Refer to Applied Biological Occupations, technical level)

3. General Sanitation Technician
(Refer to In-Depth Job Analysis Section)

4. Home Economist
   a) Duties and Responsibilities
      1) Advise and give technical assistance to individuals
      2) Evaluates data
      3) Educates and gives lectures
   b) Special Knowledge
      1) Food and Milk
      2) Health
      3) Housing
   c) Special Skills
      1) Must be able to teach
      2) Must be able to evaluate products

5. Physic Radiation Technician
   a) Duties and Responsibilities
      1) Research work with radiation equipment
      2) Operates radioactive equipment
      3) Keeps records
   b) Special Knowledge
      1) Radiation research
   c) Special Skills
      1) Must be able to operate equipment

6. Public Health Bacteriologist
   (Refer to Applied Biological Occupations)

7. Station Engineer
   (Refer to Industrial Occupations, technical level)

8. Urban Planning Technician
   a) Duties and Responsibilities
      1) Provides technical assistance and advice for urban development communities
      2) Makes field inspections analysis data and prepares reports
   b) Special Knowledge
      1) Housing and land use
      2) Safety and transportation
   c) Special Skills
      1) Must be able to draft plans
      2) Must be able to plan urban developments with concern for proper land use, housing, transportation and safety

9. Waste Water Plant Chemist
   (Refer to In-Depth Job Analysis Section)

10. Waste Water Technician
    a) Duties and Responsibilities
       1) Examines and analyzes biological samples
       2) Uses highly sophisticated equipment
       3) Keeps records
    b) Special Knowledge
       1) Must have a good chemistry background
       2) Must know how to perform proper tests
    c) Special Skills
       1) Must be able to operate sophisticated equipment
       2) Must be able to properly analyze sample data

11. Water Pollution Control Technologist
    a) Duties and Responsibilities
        1) Provides technical assistance and advice for field work
        2) Prepares equipment for field tests
        3) Operates equipment and does lab analysis for lakes, rivers and streams
    b) Special Knowledge
        1) Must have chemistry training
        2) Must know how to perform proper tests
    c) Special Skills
        1) Must be able to operate test equipment
        2) Must be able to perform tests

12. Water Purification Chemist
    a) Duties and Responsibilities
        1) Performs chemical and lab analysis of water samples
        2) Uses highly sophisticated equipment
        3) Compiles, evaluates, and records data
        4) Helps identify sources of contamination
    b) Special Knowledge
        1) Must know principles of chemistry
        2) Must know how to test and analyze samples
    c) Special Skills
        1) Must be able to operate test equipment
        2) Must be able to perform proper tests

C. Skilled Level

1. Air Analyst
   (Refer to Applied Biological Occupations, skilled level)

2. Air Pollution Control Inspector
    a) Duties and Responsibilities
        1) Observes and takes air samples in the field
        2) Operates equipment and analyzes data
        3) Prepares reports of findings
    b) Special Knowledge
        1) Must know federal and state laws and standards for air pollution
        2) Must know how to operate equipment
    c) Special Skills
        1) Must be able to operate equipment
        2) Must be able to analyze results

3. Environmental Inspector
   (Refer to Business and Management Occupations, skilled level)

4. Fireman
   (Refer to In-Depth Job Analysis Section)

5. Industrial Waste Inspector
   (Refer to Business and Management Occupations, skilled level)

6. Nuclear Inspector
   (Refer to Business and Management Occupations, skilled level)

7. Purification Plant operator
   (Refer to Health Occupations, skilled level)

8. Waste Water Treatment Plant Operator
   (Refer to In-Depth Job Analysis Section)

9. Water Pollution Control Inspector
   a) Duties and Responsibilities
      1) Observes and takes biological samples in the field
      2) Repairs and operates tests equipment
      3) Maintains records
   b) Special Knowledge
      1) Must know how to operate and repair equipment
      2) Must know principles of water pollution

10. Water Treatment Plant Operator
    (Refer to Health Occupations, skilled level)

D. Semi-Skilled

1. Air Pollution Control Aide
   a) Duties and Responsibilities
      1) Helps air pollution control inspector
      2) Assists in setting up equipment
      3) Helps in making tests and taking samples
   b) Special Knowledge
      1) Should know how to use some equipment
      2) Should know how to take proper readings
   c) Special Skills
      1) Should be able to operate some equipment

2. Biological Aide
   (Refer to Applied Biological Occupations, semi-skilled level)

3. City Planning Aide
   a) Duties and Responsibilities
      1) Assists in obtaining information for the city planners
      2) Makes field inspections and records data
      3) Prepares maps and charts
   b) Special Knowledge
      1) Should know principles of land use
      2) Should know how to prepare charts
   c) Special Skills
      1) Should be able to write reports and provide charts

4. Clerk-Typist
   (Refer to Business and Management Occupations, semi-skilled level)

5. Fire Fighter DOT 373.884
   a) Duties and Responsibilities
      1) Uses various equipment to extinguish fires
      2) Rescues people
      3) Provides first aid
   b) Special Knowledge
      1) Must know how to operate equipment properly
      2) Must know first aid

6. Forester Aide
   (Refer to Applied Biological Occupations, semi-skilled level)

7. Secretary
   (Refer to Businsss and Management Occupations, semi-skilled level)

8. Volunteer Fireman
   (Refer to In-Depth Job Analysis Section)

E. Unskilled Level

1. Entry Operator
   (Refer to In-Depth Job Analysis Section)

2. File Clerks
   (Refer to Business and Management Occupations, unskilled level)

3. General Office Clerks
   (Refer to Business and Management Occupations, unskilled level)

4. Water Filter Cleaner
   a) Duties and Responsibilities
      1) Performs physical labor in water plant
      2) Cleans and maintains water filter
      3) Keeps water plant clean
   b) Special Knowledge
      1) Must know how to clean filters
   c) Special Skills
      none

INDEPTH ANALYSIS

1) Camp Director
2) Heavy Equipment Operator
3) Operations Manager (Landfill)
4) Manager of Landscaping Center
5) Office Manager (Landfill)
6) Compactor Operator
7) General Landfill Manager
8) Landfill Division Manager
9) Process Engineer
10) Engineering Technician
11) Director of Environmental Affairs
12) General Environmental Engineer
13) Staff Biologist
14) Nuclear Engineer
15) Station Operator
16) Entry Operator
17) Volunteer Fireman
18) Fireman
19) Waste Water Treatment Plant Operator
20) Recycling Center Supervisor

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Kay Wafer Date: 5/7/73 Job Title: Camp Director DOT. No.

Cluster Personal & Public Service Level Prof. & Manag. E.P.A. Bracket Land Pollution

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Hire counselors and all workers.	beginning	of camp	X				X				Study qualifications for position.	Employee is qualified for position.
Coordinate all activities.	every day	all of camp	X				X				Talk with counselors; receive written reports	Activities run smoothly; suit each other.
Keep necessary equipment on hand.	when necessary		X				X				Check supplies frequently.	Supplies are readily available.
Set up each type of program with a specialist.	when necessary		X				X				Consult with specialist before camp.	Program meets needs of campers.
Supervise daily programs.	every day	all of camp	X				X				Observe activities, receive written reports	Activities are suited to campers' interests.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Heavy Equip Operator DOT. No. _____

Cluster Industrial Oriented Level Unskilled or Semi E.P.A. Bracket Refuse Disposal

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Hauls earth onto waste.	Every day		X				X				Uses heavy equipment.	Enough earth hauled.
Grades earth cover	Every day		X				X				Uses heavy equipment.	Proper grade.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Operations Manager (Landfill) DOT. No. _____

Cluster Industrial Oriented Level Management E.P.A. Bracket Refuse Disposal

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Supervises mechanics.	Frequently		X				X					Machinery in good repair.
Makes out daily report.	Daily		X				X					Completion of report on time.
Trains equipment operators	Frequently		X				X				Uses heavy equipment	Trained operators.
Hires and fires	Daily			X			X					Good personnel.
Sees if roads need grading.	Frequently			X			X					Propelling graded roads
Oversees entire operation.	Daily			X			X					Smoothly - run and profitable operation.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Manager of Landscaping Center DOT. No.

Cluster Industrial Oriented Level Management E.P.A. Bracket Land Pollution and Refuse Disposal

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Estimates work needed.	Daily		X				X				In the field.	Correct estimate. Satisfied customers.
Draws plans.	Frequently		X				X				Drawing materials.	Accurate plans.
Orders nursery stock.	Frequently			X			X				Uses catalogs.	Fulfills needs of center.
Waits on customers.	Daily		X				X				Person-to-person selling.	Sale or satisfied customer.
Hires and fires.	Daily			X			X					Keeps good staff.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Office Managers (Landfill) DOT. No. _____

Cluster Industrial Oriented Level Management E.P.A. Bracket Refuse Disposal

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Takes care of accounts receivable.	Every day		X				X				Book work.	Accurate books.
Sees that customers pay bills.	Frequently		X				X				Mail, telephone, direct contact.	Payment of all bills.
Handles billing.	Every day		X				X				In office.	Sends out all bills.
Keeps daily records.	Daily		X				X				Bookkeeping.	Accurate records.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Compactor Operator DOT. No.

Cluster Industrial Oriented Level Unskilled E.P.A. Bracket Refuse Disposal

($6.40 @ hour)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Levels refuse.	Every day		X				X				Uses bulldozer.	Properly leveled refuse.
Compacts refuse.	Every day		X				X				Uses compactor	Corrects density of refuse.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: General Manager (Landfill) DOT. No. _____

Cluster Industrial Oriented Level Management E.P.A. Bracket Refuse Disposal

(Salary - $22,000)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Gives lectures.	Frequently	12 a year		X			X				In the fields.	Completion of lecture.
Sets up operational plans.	Frequently		X				X				In office.	Feasible plans carried out.
Fills out monthly reports.	Frequently	12 a year	X				X				In office.	Completion of correct reports.
Purchases equipment.	Rarely			X			X					Getting the best deal on good equipment.
Sees that the landfill meets requirements of state and local E.P.A.	Frequently		X				X					Operations will be run within specified requirements.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Division Manager (Of Landfill) DOT. No.

Cluster Industrial Oriented Level Management E.P.A. Bracket Refuse Disposal

(Salary - $22,000)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Gives lectures to public interest groups and students	Frequently	10-12 times @ year		X			X				Going out to areas who request lectures.	Successful speech.
Fills out monthly reports on operations.	Frequently	12 @ year	X				X					Adequate and accurate reports done on time.
Hires and fires employees.	Rarely	4 times yearly		X			X					Hires good employees. Dismisses poor ones.
On-the-job training of new employees.	Rarely	4 times yearly		X			X				Training in the field.	Properly trained employees.
Propose innovative ideas.	Frequently			X			X					Initiation or changes in programs.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Janice Edwards Date: _____ Job Title: General Staff Engineer Process Engineer DOT. No. _____

Cluster Business, Marketing, Management Level Professional/Technical E.P.A. Bracket _____

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Directs the burning of coals and steel in large plants. Average size plant burns 10,000 tons of coal and steel daily. Control safety of equipment and fellow workers. Must have knowledge of burning in suspension.	All tasks are performed continuously.	Every day.	X				X				Knowledge of burning in suspension. Uses technical machinery. Works with both plant equipment and customers. Specials skills in energy, technology, development of cleaner fuels, low B.T.U. gases and combined cycle plants. Must be able to diagnose problems and make decisions on how to correct the problems.	

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Engineering Technician DOT. No. _____

Cluster Industrial Oriented Level Technical E.P.A. Bracket Land Pollution and Refuse Diaposal

(Salary - $900 month)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Draws plans for offices and garages.	Frequently		X				X				Uses architectural design equipment.	Acceptance of plans.
Supervises construction.	Rarely		X				X				In the field.	Successful completion of blueprint.
Selects different building materials	Frequently		X				X				Uses various cataloges.	Selection of proper materials.
Surveys buildings sites.	Rarely		X				X				In the field with surveying equipment.	Selection and correct measurement of sites.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Director of Environmental Affairs DOT. No.

Cluster Industrial Oriented Level Management E.P.A. Bracket (Electricity)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Coordinates preparation of reports.	Every day		X				X				Ability to use prior knowledge and follow guidelines.	Completion of reports.
Produce Environmental impact statement.	Frequently		X				X				Complete requirements of established criteria.	Completion and acceptance of statement.
Prepares application for permits	Frequently		X				X				Must fill out application correctly.	Completion of permit application.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: General Environmental Engineers DOT. No.

Cluster Industrial Oriented Level Technical E.P.A. Bracket (Electrical)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Prepares testimony for use in court cases.	Rarely			X			X				Attendance at court.	Completion of accurate testimony.
Establishes monitoring programs.	Frequently		X				X					Successful establishment of program.
Directs new trainees	Rarely			X			X					Answers all questions.
Divides work among assistants.	Every day			X			X					Completion of all projects.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Staff Biologist DOT. No.

Cluster Industrial Oriented Level Professional E.P.A. Bracket (Electricity)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Works with consultants to do new studies.	Frequently			X			X					Initiation of new research.
Makes up study plans.	Frequently			X			X					Completion of plans.
Sets up file system.	Rarely			X			X				Uses filing equipment available.	Completion of effective system.
Makes speeches to public interest groups.	Frequently	12 times a year		X			X				Goes where he is invited.	Completion of acceptable speech.
Teaches course to industrial workers.	Frequently			X				X			In classroom skill.	Completion of course.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Nuclear Engineer DOT. No. _____

Cluster Industrial Oriented Level Technical E.P.A. Bracket Atomic Radiation

($1,000 @ month to start)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Record keeping	Daily		X				X					Well kept records.
Trains entry operators.	Frequently		X				X				Must wear radiation proof clothing.	Well-trained operators.
Inspects emission systems.	Daily		X				X				Under radioactive surroundings.	Legal systems.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Station Operator DOT. No. _____

Cluster Industrial Oriented Level Technical E.P.A. Bracket Atomic Radiation

($6.00 @ hr)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Keeps records.	Daily		X				X					Proper records.
Assists engineer.	Daily		X				X				In radioactive surroundings must wear special clothing.	Carries out work properly.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Mary Wietting Date: 3/73 Job Title: Entry Operator DOT. No.

Cluster Industrial Oriented Level Unskilled E.P.A. Bracket Atomic Radiation

($4 to start)

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Keeps records.	Daily		X				X					Proper records.
Assists station operator.	Daily		X				X				Must wear radiation-proof clothing.	Follow directions.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Kay Wafer Date: 4/1/73 Job Title: Volunteer Fireman DOT. No.

Cluster Personal and Public Service Level Semi-skilled E.P.A. Bracket

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
On call at all times except when he is at work.	All the	time.	X				X				Has radio receiver.	Responds quickly to calls.
Must come to the fire from wherever he is.	When there is a fire.		X				X				Is assigned to go directly to fire or to fire station to drive a truck.	Is willing to come when needed.
Must be able to operate all equipment and drive all vehicles.	All the	time.	X					X			Is specially trained for all equipment and vehicle operation.	Shows competence in operation of everything.
Be able to perform first aid.	All the	time.	X				X				Has special training from teacher certified by Red Cross.	Passes written examination.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

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COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Kay Wafer Date: 4/1/73 Job Title: Fireman DOT. No. 17 2801

Cluster Personal and Public Service Level Skilled E.P.A. Bracket

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Keeps records.	Every day	7/week	X				X				Activities on the job.	Recorded important happenings.
Writes reports on each fire and sends them to state office.	Whenever fire.	there is a	X				X				Written on form, turned in very soon after fire.	Form filled out right and sent in immediately.
Notifies volunteer firemen when there is a fire.	Whenever fire.	there is a	X					X			Uses special radio. Each volunteer fireman has one in his home.	Done immediately, all men notified.
Be able to perform first aid.	When necessary.		X				X				Have special training from teacher certified by Red Cross.	Passes written examination.
Keeps equipment clean and in working condition.	At all	times.		X				X			Cleans; makes sure equipment and engines work (has repaired when necessary.	Equipment looks good and is in working condition at all times.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Kay Wafer Date: 3/27/73 Job Title: Waste Water Treatment Plant Operator DOT. No. _____

Cluster Personal and Public Service Level Skilled E.P.A. Bracket Public Water Supply

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
I. Maintenance - must keep equipment and machines in working condition.	Continuously				X		X				Must having knowledge of equipment and machines and how to repair them where possible. Keeps them in good working condition (greased, etc.)	Repairs items or has repaired. Prevents necessity of repairs when able.
II. Cleaning - keeps machines, equipment, building, and area clean and orderly	Daily or as necessary			X				X			Does cleaning as necessary; doesn't let it pile up.	Area in good order and clean.
III. Control of waste water that comes through:												

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: _____ Date: _____ Job Title: Waste Water Treatment Plant Operator (Continuous) DOT. No. _____

Cluster _____ Level _____ E.P.A. Bracket _____

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
a) Has knowledge of how to control and treat waste water.	Continuously				X		X				Studies manual of instruction.	Passes a written examination.
b) Makes sure pumps and barrels work properly.	Continuously				X		X				On-the-job training of their operation.	The water after treatment meets set standards
c) Lab analysis of water sample to keep bacteria count correct	Frequently	At least once a week.			X		X				Several special instruments are used.	Bacteria count is obtained.
1. Uses equipment to analyze												
2. Uses given standards to measure bacteria count.												

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College, DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by:_____ Date:_____ Job Title: Waste Water Treatment Plant Operator (Continuous) DOT. No._____

Cluster_____ Level_____ E.P.A. Bracket_____

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
IV. Sees that solids are properly stored in tanks.	Continu	ously			X		X				Checks flow through pipe.	Water after treatment contains no solids.
V. Knows and applies safety procedures.	Continu	ously		X			X				Prevents physical injuries, inflections, can detect noxious gases.	Enacts safety or rescue measures when necessary.
VI. Keeps records of lab tests.	Frequently	At least once a week			X		X				All tests must be recorded.	Written records are kept.
VII. Submits reports to EPA.	As requested.				X		X				Records must be kept for reports.	Reports submitted on time.

E.- Essential; D - Desirable; U - Unnecessary; NS - Not Sure

Reprint with modification from Illinois Occupational Curriculum Project, Joliet Jr. College DVTE

COMPETENCY IDENTIFICATION AND ANALYSIS WORKSHEET

Prepared by: Janice Edwards Date: _____ Job Title: Recycling Center Supervisor DOT. No. _____

Cluster Business, Marketing & Management Level Unskilled E.P.A. Bracket Land Pollution Refuse Disposal

Column A	Column B		Column C								Column D	Column E
Competency Statement	Frequency of Performance		Importance								Conditions for Application of Competency	Criteria That Exhibit Satisfactory Application of the Competency
	Every Day Frequently Rarely	No. of Times Per Week, Day, Year or Month	For Job Entry				For Job Advancement					
			E	D	U	NS	E	D	U	NS		
Open and close the recycling center. Supervise the volunteer workers. Separate material by color codes. Control the volume of materials. Runs aids in newspapers for volunteer workers and materials as needed.	All tasks are performed as needed.		X							X	Apply for the job at the recycling center. No experience needed.	Smooth running of center, clean center picking up all unused refuse.

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